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NOTE
ON
THE COMPOSITION OF DAWSONITE.

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McGill College, Montreal.

In connection with the discoveries of Dawsonite which have been made at Pian Castagnaio in Tuscany,* a few remarks on the composition of this curious mineral may be deemed of interest. It will be remembered that the specimens originally described in 1874 were from joints in a white feldspathic dyke cutting the Trenton limestone near McGill College.† Since 1874 small quantities of the mineral have been observed in the joints of several other dykes in the same neighbourhood, and beautiful specimens have been obtained at the Montreal reservoir, in what is probably a continuation of the dyke near the college. In the latter instance the Dawsonite is associated with calcite, dolomite, pyrite, minute quantities of galena and occasionally of a black substance rich in manganese. In all cases the mineral occurs in more or less fibrous blades, which are often arranged in a radiated manner. It reminds one of tremolite, and in the collection of minerals acquired by McGill College from the late Dr. Holmes of Montreal, there are several specimens of it which he had so marked.

The first specimens of Dawsonite analysed were found to contain between five and six per cent. of lime, and there was no evidence to prove that this was not one of the proper constituents of the mineral. Subsequently, however, it was found that the proportion of lime differed widely in different cases, while the ratio between the other constituents was constant. From this it

* Two papers on the subject have appeared within the last few months in the Bulletin of the Mineralogical Society of France (IV., 28 and 155), the first, entitled "Sur un nouveau gisement de Dawsonite (hydrocarbonate d'aluminium et de sodium) et sur la formule de ce minéral," by C. Friedel; the second, "Sur le gisement de la Dawsonite de Toscane," by Maurice Chaper.

† *Can. Nat.* II. vii. 305. "Notes on Dawsonite, a new Carbonate."

	I	II	III	IV	FORMULA.
Carbon dioxide*	29.27	27.96	29.06	27.78	30.49
Alumina.....	37.88	36.42	36.70	36.12	35.55
Soda.....	20.19	22.41	22.65	22.86	21.48
Water	12.66	13.21	11.59	13.24	12.47

It has also been suggested that the formula may be written $3(\text{Na}_2\text{CO}_3) + (\text{Al}_2\text{C}_3\text{O}_9) + 2(\text{H}_6[\text{Al}_2]\text{O}_6)$.†

According to Friedel, the Tuscany Dawsonite when heated to 180°C . loses nothing but a little hygrometric water. Like the Canadian mineral it gives up both its "carbonic acid" and water at a red heat. The calcined residue also dissolves easily in hydrochloric acid. Neither the hardness nor the specific gravity of the European variety has been ascertained. For the Canadian mineral the original determinations were, $\text{H} = 3$, $\text{G} = 2.40$.

* The atomic ratios for I and II are as follows :

C	.665	.636	2
$[\text{Al}_2]$	.369	.355	1
Na	.651	.723	2
O	2.764	2.696	8
$\left. \begin{array}{l} \text{H}_2 \\ \text{O} \end{array} \right\}$	.703	.734	2

† Am. Jour. Sci. III. xxii. 157.